

Patent
APPLICATION NO. 10/715,631
03SKY0029
Page 3 of 7

The Claims

1 1. (Previously presented) A method for filtering a receive signal in a wireless
2 receiver, comprising:

3 providing a received signal to an amplifier; and
4 filtering the received signal using a circuit comprising a single frequency dependent
5 negative resistance configured to realize a bi-quad filter electrically isolated from an input of the
6 amplifier such that noise contributed by the circuit is blocked from an output of the amplifier at a
7 first frequency, wherein filtering at the first frequency is performed via a single voltage-to-
8 current conversion and a single current-to-voltage conversion.

1 2. (Previously presented) The method of claim 1, wherein noise contributed by
2 the circuit is passed to the output of the amplifier only at a frequency other than the first
3 frequency.

1 3. (Previously presented) The method of claim 1, wherein the circuit comprises a
2 frequency dependent negative resistance implemented using a general impedance converter.

1 4. (Original) The method of claim 3, wherein noise generated by the general
2 impedance converter is blocked from the output of the amplifier at the first frequency.

1 5. (Original) The method of claim 4, wherein the first frequency is the in-band
2 receive frequency.

Patent
APPLICATION NO. 10/715,631
03SKY0029
Page 4 of 7

1 6. (Previously presented) A low-noise filter for a wireless receiver, comprising:
2 an amplifier; and

3 a circuit comprising a single frequency dependent negative resistance implemented using
4 a general impedance converter to realize a bi-quad filter electrically isolated from the amplifier
5 input, the circuit configured such that noise generated by the circuit is prevented from appearing
6 on a received signal at a first frequency, wherein the amplifier and the frequency dependent
7 negative resistance perform a voltage-to-current conversion and a current-to-voltage conversion,
8 respectively at a first frequency.

1 7. (Previously presented) The low-noise filter of claim 6, wherein the general
2 impedance converter further comprises:

3 a pair of operational amplifiers arranged such that a non-inverting input of a first
4 amplifier is coupled to an inverting input of a second operational amplifier; and

5 at least one capacitance configured to prevent noise generated by the pair of operational
6 amplifiers from appearing at an output of the amplifier at the first frequency.

1 8. (Original) The low-noise filter of claim 7, wherein the first frequency is the
2 in-band receive frequency.

1 9. (Original) The low-noise filter of claim 8, wherein noise generated by the pair
2 of operational amplifiers appears at the output of the amplifier at a second frequency.

1 10. (Original) The low-noise filter of claim 9, wherein the second frequency is an
2 out-of-band receive frequency.

Patent
APPLICATION NO. 10/715,631
03SKY0029
Page 5 of 7

1 11. (Previously presented) A portable transceiver, comprising:
2 a modulator configured to receive and modulate a data signal;
3 an upconverter configured to receive the modulated data signal and provide a radio
4 frequency (RF) signal;
5 a transmitter configured to transmit the RF signal; and
6 a direct conversion receiver including an amplifier and a filter, the filter comprising a
7 single frequency dependent negative resistance implemented using a general impedance
8 converter to realize a bi-quad filter electrically isolated from the amplifier input and configured
9 such that noise generated by the filter is prevented from appearing on a received signal at a first
10 frequency, wherein the amplifier and the frequency dependent negative resistance perform a
11 single voltage-to-current conversion and a single current-to-voltage conversion.

1 12. (Previously presented) The portable transceiver of claim 11, wherein the
2 general impedance converter further comprises:
3 a pair of operational amplifiers arranged such that a non-inverting input of a first
4 amplifier is coupled to an inverting input of a second operational amplifier; and
5 at least one capacitance configured to prevent noise generated by the pair of operational
6 amplifiers from appearing at an output of the amplifier stage at a first frequency.

1 13. (Original) The portable transceiver of claim 12, wherein the first frequency is
2 the in-band receive frequency.

1 14. (Original) The portable transceiver of claim 13, wherein noise generated by
2 the pair of operational amplifiers appears at the output of the amplifier stage at a second
3 frequency.

1 15. (Original) The portable transceiver of claim 14, wherein the second frequency
2 is an out-of-band receive frequency.

Patent
APPLICATION NO. 10/715,631
03SKY0029
Page 6 of 7

1 16. (Previously presented) A portable transceiver, comprising:
2 means for modulating a data signal;
3 means for upconverting the modulated data signal and provide a radio frequency (RF)
4 signal;
5 means for transmitting the RF signal;
6 means for converting a received signal to a baseband signal; and
7 means for filtering the baseband signal so that noise generated by the filter means is
8 prevented from appearing on the received signal at a first frequency, the means for filtering
9 comprising a single frequency dependent negative resistance configured to realize a bi-quad filter
10 electrically isolated from an input of the amplifier, wherein the means for filtering performs a
11 single voltage-to-current conversion and a single current-to-voltage conversion.

1 17. (Original) The portable transceiver of claim 16, wherein the first frequency is
2 the in-band receive frequency.

1 18. (Previously presented) The portable transceiver of claim 17, wherein noise
2 generated by the filter means appears on the received signal at a second frequency.

1 19. (Original) The portable transceiver of claim 18, wherein the second frequency
2 is the out-of-band receive frequency.